IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	Keith J. Brodie		
Assignee:	SiRF Technology, Inc.		
Title:	Global Positioning Tag System and Method		
Serial No.:	10/600,190	Filing Date:	June 20, 2003
Examiner:	Ronnie Mancho	Group Art Unit:	3664
Docket No.:	70004.186 (M-15536-3C US)		

Irvine, California
June 14, 2010

VIA EFS-Web
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY BRIEF

Dear Sir:

Appellants submit this Reply Brief in response to the Examiner's Answer mailed on April 14, 2010.

Status of Claims

Claims 1 – 8 are pending and at least twice rejected.

Claims 9 – 42 are cancelled.

The rejection of claims 1 – 8 is appealed.

An amendment to claim 1 under 37 CFR 41.41 was presented with the appeal brief filed on June 5, 2008. That amendment has been entered by the examiner.

Grounds of Rejection

1) Whether, under 35 USC § 112, second ¶, claims 1 – 8 are indefinite.
2) Whether, under 35 USC § 102(e), claims 1 – 3 and 8 are anticipated by Krasner (USP 5,781,156)

Arguments

The indefiniteness rejection of claims 1 – 8.

The examiner's answer has helpfully observed that, in the context of electronics manufacture, the word "chip" may indicate an integrated circuit. One could expand such an observation by further noting that that term has another meaning in the context of betting "chips" used in casinos and poker tables. Indeed, it has another meaning entirely in the potato chip arts. However, the examiner's answer then correctly notes that "chips" in the context of pseudo-random noise (PRN) sequences refers to a given binary "1" or "0" in a PRN sequence.

Although this matter had been allowed some years ago, the notice of allowance was withdrawn and the claim 1 limitation of a "range offset in chips" deemed to be indefinite. This is rather curious since the present examiner allowed the parent matter of USP 6,611,757, which is also being used to form the double patenting rejection in this matter. The board is invited to observe that claim 5 of cited USP 6,611,757 includes the identical limitation of "a range offset in chips." Finally, the present claims are also being rejected on the grounds of double patenting over USP 6,301,535, also allowed by the present examiner. The board is invited to observe that claim 9 of this patent also uses the identical limitation of "a range offset in chips."

So one is then pressed to ask: was the examiner simply not paying close attention to the limitation of "range offset in chips" when he allowed USP 6,301,535 and USP 6,611,757? This would have to be the case if suddenly in this continuation matter, the same limitation is now fatally indefinite. The Applicant respectfully submits to the board that the reality is that the examiner is instead simply in error in this matter: the term "range offset in chips" has a definite meaning in the context of present claim 1, just as it did in the parent matters.

This is rather frustrating, then, that the Applicant is now burdened with the cost of this appeal regarding a limitation that was allowed over and over in the parent matters. The Applicant respectfully notes that the first time this indefiniteness rejection was raised, the Applicant responded on July 23, 2007 with a more than sufficient explanation, the Applicant respectfully refers the board to that response - The Applicant respectfully submits that such a response should clarify the definiteness of "a range offset in chips" limitation but instead the rejection in the non-final rejection of 10/05/07 was repeated using the justification of

> 9. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
>
> In claim 1, it is not clear what all is meant and encompassed by the phrase, "the correlation snap shot comprises ..... *a range offset in* chips". The phrase, "a range offset" used in conjunction with the term, "chips" is not known in the art and confuses the scope of the claim. Although the specification discloses the above claimed phrase, there is no explanation of the

The justification for this indefiniteness rejection weakens further in the examiner's answer with the observation of

> In claim 1, it is not clear what all is meant and encompassed by the phrase, "the correlation snap shot comprises ..... *a range offset in* chips". The phrase, "a range offset" used in conjunction with the term, "chips" is not known in the art and confuses the scope of the claim. Although the specification discloses the above claimed phrase, there is no explanation of the meaning of "a range offset in chips".
>
> Appellants fail to indicate what is offset from what. As further noted appellants drawings and specification disclose two different ranges i.e. a range between GPS satellites and a receiver and further a range between an interrogator and a transponder. Which range is which? As further noted an "offset" implies that two things have been compared and one if different from the other by an offset. As such, appellant's disclosure does not distinctly set forth the subject matter which the applicant regards as the invention in reference to the claimed, "..... *a range offset in* chips". The rejection also applies to the terms, "code phase *offset*", and "Doppler frequency *offset*" since appellant fails to disclose what is offset from what?

The Applicant respectfully observes that the observation of an alleged discussion in the specification of "two different ranges" is entirely irrelevant to a legal determination of whether the language in claim 1 is definite. In that regard, note that claim 1 recites a transponder that includes circuits that "produce the correlation snapshot" and "transmit the correlation snapshot to the interrogator." As further recited in claim 1, the correlation snapshot is produced by the transponder by correlating "the RF samples of the GPS signals against replicas of a GPS signal based on the PRN code number, the Doppler frequency offset, and the code phase offset in the prepositioning data and the reference time and frequency information in the tracking signal."

As will be explained further below, one can thus observe that the transponder is performing a subset of the correlations that all GPS receivers do with regard to the PRN sequences transmitted by the satellites. But note that the transponder must then include additional circuitry if it wants to translate the correlations it has determined into a pseudorange. Although that translation is well known, it requires some computationally-expensive hardware. But claim 1 enables a user to make relatively inexpensive transponders in that the interrogator will then perform the resulting pseudorange calculations.

Thus, claim 1 further recites an interrogator that determines "a pseudorange associated with [the] received correlation snapshot, wherein the correlation snapshot comprises correlator sums and a range offset in chips." The Applicant thus respectfully submits that this entire indefiniteness issue is "much ado about nothing" in that one of ordinary skill would readily realize that is claimed here: of course the range offset in chips is concerning the chip offset between the satellite and the transponder, that is the whole point of such a collection of elements. In that regard, the GPS satellites all carry very accurate clocks that are synchronized as closely as possible. A conventional GPS receiver also synchronizes to the GPS reference time although there are always real-world offsets. So, when a GPS receiver correlates the transmitted PRN codes, that receiver is doing so with respect to this GPS reference time. That correlation occurs over the 1023 chips in the relevant PRN codes. One can thus readily appreciate that if there was no separation between the GPS satellite and the GPS receiver, the code phase offset is zero chips. But of course there is some significant separation: one can suppose that the separation between the GPS receiver and the satellite is such that the correlation peak occurs at (for example) chip number 512: the distance between the GPS satellite and that receiver would thus correspond to the time it takes to transmit 512

chips times the speed of light. But as discussed above, the GPS receiver has a real world reference clock and thus has some offset with regard to the satellite reference clock. Thus, such a range determination is denoted as a "pseudorange" measurement. If the GPS receiver can calculate a sufficient number of pseudoranges, this offset can be accommodated such that the receiver obtains an accurate estimation of its position. But as discussed above, such a calculation is computationally expensive so the interrogator is performing this calculation, not the transponder.

The Applicant thus respectfully submits that, just as in the parent matters already allowed by the present examiner, the limitation of "a range offset is chips" is abundantly definite. It is the chip range offset between the transponder and the transmitting satellite with respect to some reference time. This chip range offset must always be modulo 1023: in other words, suppose one burrowed down to the center of the earth such that the chip range offset is more than the 1023 chips in the PRN sequence transmitted by the GPS satellite. But the correlation peak will occur with regard to one of the 1023 chips: the correlator cannot say that a certain peak is actually 1023 chips plus some more (for example, 1023 + 512) since the PRN sequences are identically repeated over and over. This is all well known to those of ordinary skill in the GPS arts yet the Applicant is burdened by the cost of this appeal to explain these fundamental concepts.

To make the transponder even simpler to manufacture, note that claim 1 requires the interrogator to transmit "a code phase offset" to the transponder. In general, the interrogator will be within some general region that contains also the transponder. So the interrogator can also correlate and determine the code phase offset between it and the satellite. For example, suppose the code phase offset to the interrogator is 512 chips: the transponder need not search over all 1023 chips since it will then know that its own correlation peak will be close to that transmitted by the interrogator – for example, 512 and some fraction, etc. Thus, the transponder need not be burdened by the conventional need to include a massive parallel array of correlators: a conventional GPS receiver is not being aided by such a transponder so it must look over the entire 1023 chip wide code phase space to acquire the signal. One can thus appreciate how inventive the claim 1 system is: the claim 1 transponder may have a greatly simplified (and thus cheaper) receiver architecture to produce the recited correlation snapshot.

Similarly, claim 1 requires the interrogator to transmit a Doppler frequency offset to the transponder. As is made abundantly clear in the specification and indeed would be similarly abundantly clear to those of ordinary skill, that is the satellite Doppler frequency offset between the interrogator and the GPS satellite. In other words the satellite transmits at frequency "x" but the interrogator receives the signal at frequency "x + y" where y is the satellite Doppler offset. Because the transponder is being told by the interrogator what this offset is, it need not then worry about determining this satellite Doppler when it acquires the GPS signal: note that a GPS receiver initially has no clue what the satellite Doppler is exactly nor of course does it know the code phase offset between it and the satellite. Thus, a conventional GPS receiver must search in both frequency and code phase to acquire the satellite signal. Although this is conventional, the transponder of claim 1 is relieved of this task since the interrogator is providing the satellite "Doppler frequency offset" as recited in claim 1. Accordingly, the claim 1 usage of "Doppler frequency offset" with regard to the interrogator is definite.

With regard to the "response to argument" section of the examiner's answer, the Applicant respectfully traverses the erroneous assertion that the Applicant's opening brief argued that "range offset in chips" means "clock offset." This simply demonstrates a misunderstanding of the Applicant's discussion of "pseudorange" with regard to the clock offset between the interrogator and the transmitting satellite. The Applicant was discussing in the opening brief that the transmission of the PRN sequence takes a certain amount of time. If the interrogator clock were exact, it could determine from the correlation snapshot transmitted by the transponder that the correlation peak was (for example) 512.25 chips offset from the reference time provided by the interrogator clock. But as discussed over and over in this matter, a real-world clock will have some offset with regard to the reference clock on the satellite, thus one obtains a "pseudorange" range from the correlation peak instead of an exact range. Accordingly, claim 1 and its dependent claims 2-8 are definite.

The rejection of claims 1-3 and 8 as being anticipated by Krasner

Applicant respectfully observes that the examiner's answer in no way addressed the fundamental flaw in Krasner already noted in the Applicant's opening brief: Krasner's receivers calculate their own pseudoranges, the transponder of claim 1 does not but instead transmits a "correlation snapshot" to the interrogator – it is the interrogator of claim 1 that

then calculates the pseudorange. Yet claim 1 is deemed to be anticipated by Krasner. Like the definiteness rejection in this matter, this is simply a burden on the Applicant's resources to then have to appeal such a rejection.

As discussed previously, the Applicant does not appeal the double patenting rejections in that the Applicant will respond with terminal disclaimer upon the indication of allowable subject matter.

Conclusion

Therefore, for the reasons stated above, the Applicant respectfully submits to the Honorable Board that the indefiniteness rejections and the anticipation rejections should be reversed. If the Examiner or the Board has any questions regarding the above, the Examiner or the Board is respectfully requested to telephone the undersigned Attorney for Applicant at (949) 202-3000.

Certificate of Transmission: I hereby certify that this correspondence is being transmitted to the United States Patent and Trademark Office (USPTO) via the USPTO's electronic filing system on June 14, 2010.

Attorney for Applicant(s) — Date of Signature: 6/14/10

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Respectfully submitted,

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